



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|-------------------------------|------------------------|
| 10/567,311 | 05/11/2006 | Shozaburo Konishi | 04703/0203962-US0 | 5058 |
| 7278 | 7590 | 05/18/2010 | | |
| DARBY & DARBY P.C. P.O. BOX 770 Church Street Station New York, NY 10008-0770 | | | EXAMINER VASISTH, VISHAL V | |
| | | | ART UNIT 1797 | PAPER NUMBER |
| | | | MAIL DATE 05/18/2010 | DELIVERY MODE PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicants' submission filed on 4/28/2010 has been entered.

Response to Amendment

2. Applicants' response filed on 4/28/2010 amended independent claim 1 and dependent claim 8, cancelled claims 9-10, 13 and 16-17 and added new dependent claims 18-29. Applicants' amendments overcome the objection to the specification and overcome the 35 USC 112 rejection. Neither applicants' arguments addressed below nor amendments overcome the 35 USC 103 rejection over Miyake in view of Yagishita.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1797

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-2, 5-8 and 18-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyake et al., JP Publication No. 2001-316686 (hereinafter referred to as Miyake) in view of Yagishita, US Patent Application Publication No. 2005/0272616 (hereinafter referred to as Yagishita).

Miyake discloses a lubricant and a system having a pair of DLC contacting faces being opposed to each other and moving relative to one another, wherein at least one of which is coated with a DLC film (as recited in claims 1 and 8) and is suitably used in lubricating oils such as an engine and transmission oil (as recited in claims 1 and 6) (Para. [0001]).

The sliding members have a lubricant interposed between them used to lubricate the sliding members (as recited in claims 1 and 8) wherein the lubricant is a mineral or synthetic base oil (base oil as recited in claims 1 and 8) and has additives including molybdenum dithiocarbamate (sulfur-containing molybdenum complex as recited in claims 1, 8, 20 and 25) with a concentration of 0.01-0.2 wt% of molybdenum (within the range as recited in claims 23 and 28) and zinc dithiophosphate in a concentration as to add 50-1000 ppm phosphorus to the lubricating oil (phosphorus-based anti-wear agent

Art Unit: 1797

as recited in claims 2, 10 and 18 and overlaps the range as recited in claims 24 and 29) (Para. [0020]).

The composition of Miyake does not explicitly disclose non-DLC contact surfaces having no DLC film wherein said lubricant is interposed between the non-DLC contact surfaces as recited in claim 7. The examiner is of the position that one of ordinary level of skill in the art would envisage using the same lubricant composition in an internal combustion engine for parts that are non-DLC containing contact surfaces.

Miyake as discussed above discloses the presence of a mineral or synthetic base oil to be used in combination with a DLC coating. Miyake does not, however, explicitly disclose a base oil wherein at least one of a hydrocracked mineral oil, a wax-isomerized mineral oil, and a poly-alpha-olefin base oil, and has a kinematic viscosity of 2 to 20 mm²/s at 100° C, a total aromatic content of not higher than 5 mass %, and a total sulfur content of not higher than 0.005 mass %. Miyake also does not disclose a friction modifier and a metal detergent.

Yagishita discloses a lubricant composition for use in an internal combustion engine comprising a base oil derived from hydrocracking and produced by isomerizing GTL wax (as recited in claims 1 and 8) (Para. [0020]) wherein the hydrocracked base oil has a kinematic viscosity of 10 mm²/s or less (which overlaps the kinematic viscosity range as recited in claims 1 and 8) (Para. [0025]), has a total aromatics content of 2 mass% or less (within and encompassing the aromatics range as recited in claims 1 and 8) (Para. [0024]) and a total sulfur content of 0.1 mass% or less (within and

Art Unit: 1797

encompassing the sulfur content range as recited in claims 1, 5, 8 and 19) (see Abstract).

The fully formulated composition of Yagishita further comprises additives including neutral alkaline earth metal salicylates in a concentration of 0.005 to 5% by mass of the total of the composition, and the amount being an amount in terms of the metal element therein (a sulfur-free, neutral metal detergent as recited in claims 1 and 8 and overlaps the range as recited in claims 23 and 28) (Para. [0028], [0048] and see Abstract), 0.005 to 5 wt% of a friction modifier including aliphatic acid esters, aliphatic amines, aliphatic acid amides and aliphatic ethers (as recited in claims 1, 8 and 21 and overlaps the range as recited in claims 23 and 28) (Para. [0061] and [0070]) and anti-wear additives including metal phosphates (sulfur-free phosphorus anti-wear compound as recited in claims 2, 10 and 17).

Yagishita discloses aliphatic acid ester friction modifiers, but does not explicitly disclose glycerol monooleate being the specific aliphatic acid ester friction modifier. It is the position of the examiner that one of ordinary skill in the art would immediately envisage glycerol monooleate from the disclosure of Yagishita and that glycerol monooleate would be obvious to try as a friction modifier in the composition.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the base oil and additives of Yagishita in the composition of Miyake because all the additives are very well known in the art and would conventionally be used to enhance friction, detergency and anti-wear properties in the composition.

Response to Arguments

6. Applicants' arguments filed on 4/28/2010 with respect to claims 1-2, 5-8 and 18-29 have been fully considered and are not persuasive.

Applicants argue that neither Miyake nor Yagishita disclose the object of the present invention which is "to stably maintain low friction property." Firstly, Miyake states that extreme pressure additives do not easily form films or absorb on substrates with DLC or similar coatings, but Miyake does disclose the presence of an anti-wear additive such as zinc dithiophosphate and an antioxidant such as molybdenum dithiocarbamate. Miyake discloses that full expression of these additives is difficult but that the composition of Miyake along with the content of the coating can be combined in order to resolve the issue and embody a composition with low friction characteristics. Also, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Finally, it is the position of the examiner that the composition comprising Miyake modified by Yagishita discloses all of the limitations recited in the instant claims and would therefore inherently possess the properties taught by the instant application.

Applicants also argue that the present invention provides unexpected results and point to the data in Table 1 of the instant specification to support their position. Applicants did compare their example oils to the closest prior art but the data is not commensurate with the scope of the claims, including the newly added claims. Even if

Art Unit: 1797

the newly added claims are commensurate in scope, the independent claims from which they depend are not. For example, the additives blended with the base oil to formulate the finished composition are in very specific concentrations and are very specific compounds. For instance in base oil 1, the friction modifiers are glycerin monooleate. Claim 1 merely recites a sulfur-containing molybdenum complex and does not include any of the other additives or any of their respective concentrations. Therefore, the arguments are not persuasive to show unexpected results. Also, in order to demonstrate unexpected results the criticality of the ranges need to be shown and compared to the closest prior art. Applicants did narrow the base oils in a manner that demonstrates unexpected results but none of the additives were narrowed in the same manner and the additive compounds were not limited. The example oils also use friction modifiers that are currently outside the scope of the amended, independent claims.

Finally applicants argue that Yagishita merely discloses friction modifiers as optional additives and does not disclose an example using a specific friction modifier. This argument is also not persuasive. Yagishita discloses friction modifiers in order to reduce friction in internal combustion engine compositions that have metal surfaces. The entire disclosure of Yagishita needs to be examined and not simply the example oils. The fact that Yagishita discloses several friction modifiers that can be used in its composition indicates a general state of the art wherein a friction modifier may be used with a reasonable expectation of success.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VISHAL VASISTH whose telephone number is (571)270-3716. The examiner can normally be reached on M-R 8:30a-5:30p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571)272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

VVV

/Glenn A Caldarola/
Supervisory Patent Examiner, Art
Unit 1797